of a ceramic seat 109 is fixed on a top face of the insulating ceramics 108. A single emitter 101 is fixed on a top surface of the ceramic seat 109 such that it is heated by a heater 3 which is a heating means. A lead for the heater 103, and high voltage cables 107 for a cathode extend from a bottom face of the insulating ceramics 108.

A Wehnelt member, i.e., Wehnelt electrode 102 is fitted over the cylindrical electron gun body 106. The Wehnelt electrode 102 has one end (upper end in the figure) integrally formed with an end wall which is provided with a single small hole (Wehnelt hole) 110.

The Wehnelt electrode 102 is fixed by a stop ring 104 at a position at which its end wall section is in close proximity to the emitter 101. The insulating ceramics 108 can be finely adjusted in its position in the horizontal direction by a plurality of finely movable screws 105 which extend through a peripheral wall of the electron gun body 106. Through the adjustment, the emitter 101 supported by the ceramic seat 109 on the insulating ceramics 108 is brought into alignment with the hole 110 provided through the end wall of the Wehnelt electrode 102.

However, there are problems in applying the method of finely adjusting the relative position between the single emitter 101 and Wehnelt electrode 102 as mentioned to an electron gun which comprises a multi-emitter having a plurality of emitters.

First, when the insulating ceramics is finely moved to finely adjust the multi-emitter in its in-plane position

deflector 211 of an ExB separator 210.

A plurality of focused primary electron beams PB are irradiated onto the sample 209 to scan four points thereon. Secondary electrons emitted from these irradiated four points are accelerated by an electric field applied between the objective lens 208 and sample 209. In this way, the secondary electrons, which are emitted at a large angle to the normal of the sample surface, are also finely converged into four fine secondary electron beams SB (i.e., four fine secondary electron beams) which pass through the objective lens 208 and are deflected by the ExB separator 210. Thus, the secondary electron beams SB are separated from the primary optical system for irradiating the sample 209, and introduced into a secondary optical system.

The secondary optical system has magnifying lenses 212, 213. The four secondary electron beams SB, which have passed through these magnifying lenses 212, 213, are spaced from adjacent beams at wider intervals by a larger spacing, focused on four apertures of a second multi-aperture plate 214, and guided to four detectors 215. The second multi-aperture plate 214 is disposed in front of an incident plane of the detectors 215. The four apertures of the second multi-aperture plate 214 are formed along the circumference of the second multi-aperture plate 214, and correspond one-to-one to the four apertures formed through the first multi-aperture plate 204. Consequently, the four primary electron beams PB and four secondary electron beams SB are distributed over the circumference about the optical